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SCHWABE, WILLIAMSON & WYATT, P.C.
PACWEST CENTER, SUITE 1900
1211 SW FIFTH AVENUE
PORTLAND, OR 97204

EXAMINER

HOFFBERG, ROBERT JOSEPH

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/723,722	Applicant(s) BHATTACHARYA ET AL.	
	Examiner Robert J. Hoffberg	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/26/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/8/04 5/17/04</u> | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-16 and 24-33 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-16 and 24-33 are vague and indefinite because of a reference to an industry standard makes the claims inherently vague and indefinite as industry standards are subject to change and/or revision. For example, the PCMCIA standard originally had boards of a single size, but currently, the revised standard covers multiple sizes.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Suga et al. (US 6,052,284).

With respect to Claim 1 (as best understood), Suga et al. teaches a standardized peripheral apparatus comprising: an integrated circuit (Fig. 2, #3); a

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case (Fig. 2, #20) encasing the integrated circuit, the case having a form factor including a plurality of external dimensions in compliance with a standard having a plurality of specifications governing the form factor and the external dimensions but not providing for thermal management arrangement; and a thermal management arrangement (Fig. 1B, #25) to either modify or augment the case to provide a suitable thermal environment for the integrated circuit without causing the case to cease to comply with the standard's form factor and external dimension specifications.

With respect to Claim 2 (as best understood), Suga et al. further teaches wherein the thermal management arrangement comprises an outlet vent (Fig. 1A, #62) disposed on a first portion of a first surface of the case, to facilitate an exhaust of heat generated by the integrated circuit into an ambient.

With respect to Claim 3 (as best understood), Suga et al. further teaches wherein the thermal management arrangement further includes an inlet vent (Fig. 1A, #61) disposed on a second portion of a second surface of the case, to facilitate an intake of air from the ambient.

With respect to Claim 4 (as best understood), Suga et al. further teaches wherein the first and second surfaces are of the same (see Fig. 3A, #61 and 62) surface.

With respect to Claim 24 (as best understood), Suga et al. teaches a method comprising: operating an integrated circuit (Fig. 2, #3), housed inside of a case (Fig. 2, #20) having a form factor including a plurality of external dimensions in compliance with a standard having a plurality of specifications governing the

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form factor and the external dimensions but not providing for thermal management arrangement, leading to heat being sourced from the integrated circuit; providing a suitable thermal environment (Fig. 1B, #25) for the integrated circuit by, at least in part, modifying or augmenting the case without causing the case to cease to comply with the standard's form factor and external dimension specifications.

5. Claims 28 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Hughes et al. (US 6,011,690).

With respect to Claim 28 (as best understood), Hughes et al. teaches a system comprising: a host device (Col. 1, lines 12-14); a standardized peripheral device including electronic circuitry (Fig. 1, #16) including an integrated circuit; a case (Fig. 1, #12) encasing the electronic circuitry, the case having a form factor including a plurality of external dimensions in compliance with a standard having a plurality of specifications governing the form factor and the external dimensions but not providing for thermal management arrangement; and a thermal management arrangement (Fig. 2, #26) to either modify or augment the case to provide a suitable thermal environment for the integrated circuit without causing the case to cease to comply with the standard's form factor and external dimension specifications; and a connector (Fig. 2, #18), to couple the standardized peripheral device to the host device.

With respect to Claim 31 (as best understood), Hughes et al. further teaches wherein the electronic circuitry includes a selected one of a data storage

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device (Col. 1, line 20) and a communication interface adapter (Col. 1, lines 21-22).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5-14, 17-19, 22-23 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suga et al. (US 6,052,284) as applied to the claims above, and in view of Glezer et al. (US 6,588,497).

With respect to Claim 5 (as best understood) and 26 (as best understood), Suga et al. teaches the standardized peripheral apparatus or method of the above claims. Suga et al. does not teach a flow generating device. Glezer et al. teaches wherein the thermal management arrangement further comprises a flow generating device (Fig. 3, #81) disposed inside the case (Fig. 3, #83) using available space, to at least facilitate an air flow (Fig. 3, #97) over the integrated circuit (Fig. 3, #93) in a general direction from the inlet vent (Fig. 3, #99) to the outlet vent (Fig. 3, #98). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the standardized peripheral apparatus of Suga et al. with that of Glezer et al. for the purpose of providing flow generating device to increase air flow movement.

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With respect to Claims 6 (as best understood) and 19, Suga et al. does not teach the position of the flow generating device. Glezer et al. further teaches wherein the flow generating device is positioned substantially near (see Fig. 3) the inlet vent. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the standardized peripheral apparatus of Suga et al. with that of Glezer et al. for the purpose of locating flow generating device to draw into the case cool air.

With respect to Claims 7 (as best understood), 20 and 27 (as best understood), Suga et al. does not teach the type of flow generating device. Glezer et al. further teaches wherein the flow generating device comprises a jet actuator or synthetic jet actuator (Fig. 3, #81). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the standardized peripheral apparatus of Suga et al. with that of Glezer et al. for the purpose of providing an efficient means of pumping cool air.

With respect to Claims 8 (as best understood) and 21, Suga et al. does not teach the type of flow generating device. Glezer et al. further teaches wherein the jet actuator or synthetic jet actuator comprises a selected one of a piezoelectric (Col. 4, line 4) synthetic jet actuator and an electromagnetic synthetic jet actuator. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the standardized peripheral apparatus of Suga et al. with that of Glezer et al. for the purpose of providing a oscillating pump to create air flow.

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With respect to Claim 9 (as best understood), Suga et al. does not teach the size of the jet actuator. While Glezer et al. teaches a jet actuator, it fails to disclose a size of the jet actuator, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to include a jet actuator that is approximately between 2-3 mm high or any size which would allow the apparatus to operate at maximum efficiency.

With respect to Claims 10 (as best understood) and 22, Suga et al. does not teach the jet actuator or synthetic jet actuator input power. While Glezer et al. teaches a jet actuator, it fails to disclose a input power for the jet actuator, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to include a jet actuator that operates on input power of approximately between 10 and 50 milliwatts or any range which would allow the apparatus to operate at maximum efficiency.

With respect to Claim 11 (as best understood), Suga et al. teaches the standardized peripheral apparatus of the above claims wherein the thermal management arrangement further comprises: at least one partition (Fig. 4, #24) disposed inside the case using available space to provide a plurality of air flow chambers (see Fig. 3a) an air flow over a portion of the integrated circuit (Fig. 3, #3A). Suga et al. does not disclose a flow generating device. Glenzer et al. teaches a flow generating device (Fig. 3, #81) disposed inside the case (Fig. 3, #83) using available space to facilitate an air flow (Fig. 3, #97) over a portion of the integrated circuit (Fig. 3, #93). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the standardized

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peripheral apparatus of Suga et al. with that of Glezer et al. for the purpose of creating baffles to direct the air flow.

With respect to Claim 12 (as best understood), Suga et al. further teaches wherein the flow generating device and at least a portion of the integrated circuit are located substantially in a first air flow chamber (Fig. 3A, left column).

With respect to Claim 13 (as best understood), Suga et al. further teaches wherein the first air flow chamber (Fig. 3A, left column) is defined in part by the second portion of the second surface on which the inlet vent (Fig. 3A, #61) is disposed; and the first portion of the first surface on which the outlet vent (Fig. 3A, #62) is disposed defines a second air chamber (Fig. 3A, right column).

With respect to Claim 14 (as best understood), Suga et al. further teaches wherein the first airflow chamber is flow-coupled (see Fig. 3A and Col. 2, line 5-6) to the second air flow chamber.

With respect to Claim 17, Suga et al. teaches a standardized peripheral apparatus comprising: an integrated circuit (Fig. 2, #3); a case (Fig. 2, #20) encasing the integrated circuit, the case having an outlet vent (Fig. 1A, #62) disposed on a first portion of a first surface of the case to facilitate exhaust of heat generated by the integrated circuit, into ambient; and an inlet vent (Fig. 1A, #61) disposed on a second portion of a second surface of the case, to facilitate an intake of air from the ambient; and a connector (Fig. 1, #5), to directly couple the apparatus to a host device in a substantially rigid relationship. Suga et al. does not disclose a flow generating device. Glezer et al. teaches a flow generating device (Fig. 3, #81) disposed inside the case (Fig. 3, #83), to at least

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facilitate an air flow (Fig. 3, #97) over the integrated circuit (Fig. 3, #93) in a general direction from the inlet vent (Fig. 3, #99) to the outlet vent (Fig. 3, #98). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the standardized peripheral apparatus of Suga et al. with that of Glezer et al. for the purpose of providing flow generating device to increase air flow movement.

With respect to Claim 18, Suga et al. further teaches wherein the first and second surfaces are of the same surface (see Fig. 3A, #61 and 62).

With respect to claim 23, while Suga et al. in view of Glezer et al. fail to disclose the application of the connector, it would have been obvious to one of ordinary skill in the art at the time of the invention was made that the connector to include a 32-bit Cardbus connector and a universal serial bus connector or any connector which interfaces with the mating apparatus.

With respect to Claim 25 (as best understood), Suga et al. teaches the method of claim 24. Suga et al. fails to teach an air flow path. Glezer et al. teaches wherein modifying or augmenting the case (Fig. 2, #20) includes providing an inlet vent (Fig. 3, #99) to introduce air from an ambient into the interior of the case; providing an outlet vent (Fig. 3, #98) to exhaust at least a portion of air from the interior of the case to the ambient. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Suga et al. with that of Glezer et al. for using air as the coolant fluid.

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8. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suga et al. (US 6,052,284) as applied to claim 1 above, and in view of Hughes et al. (US 6,011,690).

With respect to Claim 15 (as best understood), Suga et al. teaches the method of claim 1. Suga et al. fails to teach usage as a PC card. Hughes et al. teaches wherein the integrated circuit (Fig. 1, #16), the case (Fig. 1, #12) and the thermal management arrangement (Fig. 2, #26) form a PC Card (Fig. 1, #10). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Suga et al. with that of Hughes et al. for using the apparatus as a PC card.

With respect to Claim 16 (as best understood), Suga et al. does not teach PC Card type. Hughes et al. further teaches wherein the PC Card is a selected one of a data storage device (Col. 1, line 20) and a communication interface adapter (Col. 1, lines 21-22). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Suga et al. with that of Hughes et al. for using the apparatus as a PC storage or communication card.

9. Claims 29 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes et al. (US 6,052,284) as applied to claim 28 above, and in view of Demeter et al. (US 6,439,992).

With respect to Claim 29 (as best understood), Hughes et al. teaches the system of claim 28. Hughes does not disclose an exhaust and inlet vents and a flow generating device. Demeter teaches wherein the thermal management

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arrangement comprises an outlet vent (Fig. 3, #22), disposed on a first portion of the case, to facilitate an exhaust of heat generated by the integrated circuit into an ambient; an inlet vent (Fig. 3, #20), disposed on a second portion of the case, to facilitate an intake of air from the ambient; and a flow generating device (Fig. 4, #26) disposed inside the case using available space, to at least facilitate an air flow (see Fig. 4) over the integrated circuit (Fig. 5, #38 within game system). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Hughes et al. with that of Demeter et al. for using air flow to cool electronic circuitry.

With respect to Claim 32 (as best understood), Hughes et al. teaches the system of claim 28. Hughes et al. fails to teach that the host device could be one of a set-top box, a mobile phone, a digital camera, and a personal digital assistant. Demeter et al. teaches that the host device is a selected one of a set-top box (Fig. 5, #38 video game system on a television set), a mobile phone, a digital camera, and a personal digital assistant. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Hughes et al. with that of Demeter et al. to provide a thermal management system for any type of electronic device needing to be cooled.

10. Claim 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes et al. (US 6,052,284) in view of Demeter et al. (US 6,439,992) as applied to claims above, and further in view of Glezer et al. (US 6,588,497)

With respect to Claim 30 (as best understood), Hughes et al. and Demeter et al. teach the system of the claims above. They fail to disclose that the flow

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generating device could be one of a piezoelectric (Col. 4, line 4) synthetic jet actuator and an electromagnetic jet actuator. Glezer et al. teaches that the flow generating device is a selected one of a piezoelectric synthetic jet actuator and an electromagnetic jet actuator. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the method of Hughes et al. with that of Demeter et al. and further with that of Glezer et al. for using a jet actuator air flow to cool electronic circuitry.

11. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes et al. (US 6,011,690).

With respect to Claim 33 (as best understood), Hughes et al. teaches the device in Claim 28. While Hughes et al. fails to disclose the application of the connector, it would have been obvious to one of ordinary skill in the art at the time of the invention was made that the connector to include a 32-bit Cardbus connector and a universal serial bus connector or any connector which interfaces with the mating apparatus.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Morton et al. (US 5,914,856), Glezer (US 6,123,145), Zuo (US 6,631,077), Chysler et al. (US 6,650,542) and Manno et al. (US 2002/0145851) teach jet actuators to cool electrical devices.


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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


LISA LEA-EDMONDS
PRIMARY EXAMINER

RJH 